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Sitten," read "Dr. Henry Calderwood, Professor of Moral Philosophy in the University of Edinburgh, in his introduction to Semple's translation of Kant's *Ethics*." In §100 (Vol. VIII., p. 350) for "Semple," read "Calderwood." In §17 (Vol. V., p. 34) for "Mr. Semple," read "Dr. Calderwood." In §71 (Vol. V., p. 298) for "Apelles," read "Timanthes." In §67 (p. 296) for "judicial duty," read "juridical duty." In §75 (p. 301) last line, read [§24] instead of [§54].—J. E.

NOTES AND DISCUSSIONS.

On Pleasure and Pain.

[Dr. Brinton, writing editorially in the *Medical and Surgical Reporter*, discusses in recent numbers the subject of Pleasure and Pain. We quote here the greater part of the two articles which he devotes to it.—EDITOR].

When Socrates was about to drink the cup of hemlock, and the jailer had loosed the fetters which had galled his ankles, he rubbed them with a feeling of relief, and exclaimed to his disciples: "How singular is the thing called pleasure, and how curiously related to pain which might be thought to be the opposite of it: for they never come to man together, and yet, he who pursues either of them is generally compelled to accept the other also. They are two, and yet they grow together out of one head or stem. I cannot help thinking that if Æsop had noticed them, he would have devised a fable about some god trying to reconcile their strife, and when he could not, tying their heads together; and that is the reason why when one comes the other follows."

Such, according to the record in the *Phædo* of Plato, were the reflections of the greatest philosopher of Greece, on these discrepant sensations. Up to the present time so far as we can find, no satisfactory doctrine of their relations has been taught. Something much better than an Æsopian fable has indeed been brought forward to explain them. Theories, with more or less testimony to their truth, have been adduced. Pain, says Beclard, is an excess of the sense of touch: *Physiologie*, p. 883. It is, says another physiologist, hyperæsthesia of the sensory fibres. The lexicographers seem to have been puzzled with it. Professor Dunglison calls it "a disagreeable sensation which scarcely admits of definition." The *Dictionnaire des Sciences Medicales* gets over it by the convenient statement that it is so well known that to define it is superfluous! While Dr. Gardner in his

Medical Dictionary, has a still neater device. Turning to pain, we read, "pain, see dolor." Hunting up dolor we have the pleasure of finding "dolor—pain." Professor Erb, in Ziemssen's *Cyclopaedia*, Vol. XI, p. 12-15, discusses the point at length, and comes to the conclusion that pain is a new sensation, experienced when excitation of the nerves reaches a certain intensity.

These quotations only show how little is understood of the origin of pain and its brotherhood with pleasure. To reach a better understanding of them, let us turn to the simplest conception of existence. It is change, motion; beyond this we cannot go. Individuality, the existence of the unit organism, this means motion in definite composition, what mechanicians call a resultant of motion, wherein many motions are united in a solidarity of action. But an organism is not this only, or it were merely a complicated machine. That in which it differs from a machine is in its power of keeping up its motion. This it does by the process of *nutrition*.

The first law of motion, as defined by Huyghens, and later by Sir Isaac Newton, is that "*every body continues in a state of rest or of uniform motion in a straight line, unless acted on by some external force.*" This law is usually said to result from "the property of inertia"—a meaningless explanation, as there is no such property. The real explanation was hinted by the philosopher Kant, when he showed that *time* is a condition of perception, not a form of force or quality of matter, and, therefore of itself can never influence motion, which belongs essentially to matter.

This first law of motion becomes the first law of philosophical biology, modified so as to allow the phenomenon of nutrition. In this form it is given by Auguste Comte in the following words: "Every condition, static or dynamic, tends of itself to remain without any change, opposing itself to external force." (*Système de Politique Positive*, Tome IV., p. 178).

The new element which is here brought in is a resistance to external perturbations. In tissues this is seen in the qualities of elasticity, contractility, and irritability. When the primitive motions of an organism are interfered with, these resist the interference, and that which enables them to do so is *nutrition*; the antagonizing force they expend is at once supplied by the blood up to a certain point. Beyond this, nutrition cannot go, waste exceeds repair, and the primitive motions suffer loss, which, pushed to its extreme, means death of the part or system.

All external forces or perturbations whatever interfere with what we call the primitive motions. Every movement of our bodies, all action does so, but so long as the repair is equal to the waste, the motions are strengthened by rhythmic action, and do not decrease. Hence exercise, not in excess, is beneficial.

The principle of opposition to outside influence, thus derived from

nutrition, is the fundamental fact in self-preservation. As such it is confined to organism and is a quality of it, not dependent on inertia nor on time as a condition of perception. Hence the famous maxim of the philosopher, Benedict de Spinoza:—" *Una quæque res, quantum in se est, suum esse perseverare conatur*," is true only as to organic things. No *conatus* exists in inorganic life.

Thus the sentiment of self-preservation is prompted by nutrition, and to this also is referred repair and waste. Can we connect with these fundamental qualities of life the sensations of pleasure and pain? No one knows better than the physiologist how false is the old maxim, "Seeing is believing." He knows that sight and all the other senses never show us things as they are. "No kind and no degree of similarity," observes Professor Helmholtz, "exists between the quality of a sensation and the quality of the agent inducing it and portrayed by it." Our sensations tell us nothing of the real nature of the external world. They are mere symbols, every whit as remote as the written word *horse* is from the animal. Their value depends, however, not on the fidelity of their correspondence, for this is null, but on their fidelity at all times to the same impression. The color red is always the color red, the scent of the rose is the scent of the rose, and it is this logical law of identity which gives sensations their value, not the objects which call them forth.

The laws which govern the correspondence of sensations to impressions are those of transmission: In other words, of nutrition. By an accidental variation of structure at some remote epoch, a cranial nerve became sensitive to light; this aided the animal in its efforts to nourish and preserve itself, and strengthened by descent, gave rise to an eye. All the senses arose and were ripened in a similar manner. The stimulus of all of them is their preservative powers.

Now it is conceded by students of sensations that all of them partake either of the nature of pleasure or of pain. Every impression is either one agreeable or disagreeable. It is further experimentally demonstrable that an agreeable sensation is one which is produced by a sustained and continuous impression up to the point of fatigue, a musical tone, for example; while intermittent and discontinuous impressions, as tones of different pitches, or a flickering light produce disagreeable sensations. This is the inductive axiom on which Helmholtz bases his celebrated *Lehre der Tonempfindungen*.

Continuous impressions, short of fatigue, mean, as shown above, increased nutrition, repair exceeding waste, preservation strengthening itself. Pleasure, therefore, is physiologically the quality given to sensation by nervous action not in excess of nutrition. The utmost pleasure is derived from maximum action with minimum waste.

This generalization offers many instructive corollaries. That which

we call the beautiful in art depends upon it. Hogarth drew a "line of beauty," which he found to be that which in its variations most gratifies in outline and form. It is a double curve, and an analysis of it shows it to be that which the muscles of attachment of the eye permit our sight to follow with least labor to themselves. A curve is preferred, in art, to a rectangle, for the same reason. The changes in languages toward greater brevity and sonorousness are dependent upon the rising preference for action with least waste, which the use of such idioms implies.

Waste exceeding repair produces a disagreeable sensation, reaching as it increases to actual pain. As such it incites to action, but to deterrent and evasive action. Pain is the sensation attendant on the death of the part or system. As the sensation opposed to self-preservation and continuity, as contrary to the first law of existence or motion, it is avoided by all organisms. "To move *from* pain and *to* pleasure is the fundamental law of organic beings," says Professor Bain.

The reader may still be dissatisfied with the explanation, and ask, through the operation of what general law are deterrent sensations, that is, painful ones, associated with waste? Is it an *a priori* arrangement in "the fitness of things?" The question is a proper one, and the reply is, not at all; it is a mere accident; not hardly as much as an accident, but a piece of unconscious choosing. There is nothing in waste itself which necessarily ties it to pain. No god fastened their heads together.

Probably many creatures have been born whose nerves felt pleasure in waste of tissue. Their race is not extinct. "There are," says the Baron Holbach in one of his works, "some men who find no pleasure except in actions which will bring them to the gallows." Fortunately, human law generally brings them there. And natural law with infinitely greater certainty soon or forthwith destroys that organism which finds pleasure in waste, but preserves that one which feels pain from waste and transmits this feeling, strengthened by descent, to its progeny. The vices which conceal waste under pleasure, such as alcohol and opium-taking, are the most dangerous ones.

This physiological discussion shows how erroneous that doctrine is which regards pleasure as the negative of pain, (pessimism), or pain, the negative of pleasure, (optimism). The Scandinavian mythology represented Odin, the god of action and effort, as accompanied by his two brothers *Vili* and *Ve* (*Wohl* and *Weh*, pleasure and pain). So in fact every action disturbs the pre-existing relations of nutrition, and brings out agreeable or disagreeable feelings. But as repair is one definite thing and waste is another definite thing, so are the feelings to which they give rise.

This inquiry does not stop with physiology. All religions are founded on some theory of pain. They all teach "purification by

suffering;" they all connect pain with sin, death with evil. pleasure with goodness, life with joy. In much that they teach the confusion of sensation and thought is evident; pain and death, as has been shown, cannot have come into the world by sin, for the latter can exist in the intellect alone, while the former is common to all organic existence. But that in which the better religions are right, is that in preservation in continuous life, in obedience to law, lies man's true happiness; that through the destruction of those who disobey, consciously or unconsciously, the race is purified; and that sin, wrongfulness, conscious evil-doing has a punishment as certain, as eternal, as irrevocable as Calvin ever taught. The easy doctrine that "bad is good in the making," or that "an error is a truth half seen," finds not a vestige of support before the merciless laws which take no steps backward, hear no prayers, and admit of no moment of truce. The ground maxim of all morals lies in pleasure and pain, and is embraced in this sentence from Schopenhauer: "No error is harmless; every one will sooner or later do him who harbors it a hurt."

Michael Angelo's Poem on the Death of his Father and Brother.

While during the four centuries which have elapsed since his birth, ample justice has been done to the magnificent creative genius and commanding intellect of Michael Angelo Buonarotti, yet few have recognized the high moral worth, and still less the warmth of heart and tenderness of feeling which rounded out the perfection of his nature, and which are essential to the ideal of an artist's life. The strength of his character, his proud and often passionate speech, and his stern moral purpose in strong contrast to the laxity and corruption of his time, often placed him in conflict with the interests and prejudices of his contemporaries, and his superiority could not but excite envy and jealousy among his rivals. A few anecdotes have preserved the memory of these unworthy passages, and have cast into the shade the genial and loving traits of character of which there is ample evidence. The late researches of his biographers have brought out his letters to his family, and his poems as he originally wrote them, and thus revealed to us the sacredness and strength of his affections.